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ON THE OPERATIVE TREATMENT OF ENTROPIUM.

BY JOHN GREEN, M. D., ST. LOUIS.

[Continued from page 200.]

Before passing to the consideration of the numerous operative methods which have been devised especially for the cure of entropium, it is important to insist once more upon the distinction between simple inversion of the eyelid from perverted muscular action and the more intractable organic affection which depends upon structural changes from cicatrization in the tarsal conjunctiva and tarsal tissue, and in the posterior angle of the lid-margin. This distinction, although doubtless recognized from very early times, is nevertheless first clearly stated by the systematic writers of about half a century ago[1], who testify to the efficacy of various methods then in vogue when applied to the treatment of muscular entropium (*E. spasticum* and *E. senile*), but regard cicatricial entropium (*E. organicum*) as far less

1. Jüngken; Chelius; et al.

amenable to treatment or as incurable. Accordingly we find that the writers of the eighteenth and first half of the nineteenth century lay great stress upon the palliative treatment of trichiasis, by means of systematic and frequently repeated epilation, to the exclusion, almost, of methods addressed to the radical cure of entropium; methods which, if noticed at all, are mentioned only to be rejected, or, perhaps, to be hesitatingly accepted as of limited value and of only occasional applicability. In fact the operative treatment of entropium appears to have been less perfectly understood and practiced fifty years ago than it was in the time of Celsus, and we may still turn with profit to the medical writers of antiquity for suggestions of methods once successfully practiced but subsequently neglected and forgotten.

The various operative procedures applicable to the treatment of entropium may be grouped in three divisions, according as they are intended, (*a*) to effect traction upon the lid-margin through the skin, (*b*) to relax the ciliary portion of the orbicularis muscle, or (*c*) to correct the incurvation of the tarsal tissue by bending it, or by transplanting the lid-margin forwards. Of these indications any two, or all, may be realized in a single operation, and this is actually the case with many of the better methods now in use, and also, in a lesser degree, even with some of the methods which have been already referred to as especially designed for the cure of trichiasis.

Of the operative methods intended to effect the eversion of the lid-margin by traction through the skin, one of the most ancient[2] consists in the excision of a large oval or crescent-shaped piece of skin from the eyelid, and it is even now a not infrequent experience of the ophthalmic surgeon to meet with cases in which nearly all the integument of the lid has been thus ruthlessly sacrificed by some reckless or inexperienced operator. The effect of this procedure in everting the lid-margin is greatest when the excision of skin has been made close to the line of the cilia, but it is, at the best, very slight, and is not at all increased by increasing the height of the excised flap at the expense of the integument in the neighborhood of the orbital

2. Celsus, VII, VII, 8; et al.

margin. As a cure for entropium it is, by itself, one of the least effective methods, and when misapplied it may give rise to very great disfigurement. As applied to the upper lid its effect is rather to lift them to evert, and this to the extent even of preventing the closure of the eyelids although the eye may still continue to be teased by misdirected cilia.

The destruction of a portion of the integument of the eyelid by means of the hot iron or by caustics, or by strangulation by means of a clamp, is described by various medical writers of antiquity,[3] and in some of its forms still holds a place in the surgery of certain Asiatic races. The effectiveness of the actual cautery is determined mainly by two factors, namely, the proximity of the burning to the line of implantation of the cilia and the depth to which the tissues are destroyed by it. Obviously, with the heated iron or with caustics these points cannot always be accurately regulated, but with the Galvanic cautery it is possible to perform the operation with comparative precision, and thus to combine the greatest possible effect with the least possible disfigurement. To this end the burning should be done along a line as near as possible to the row of cilia, without injuring their bulbs, and should extend into or even through the muscular layer; it should be limited, also, to the destruction of a very narrow strip of skin. The effect of the cauterization, especially when it is carried deep enough not only to destroy a strip of the muscular layer, but also to sear the subjacent tarsal tissue,[4] is to establish a firm cicatricial union of the margins of the wound in the skin with the tarsal tissue, and thus, through the contraction of the cicatrix, to evert the lid-margin. It is obvious, however, that the degree of eversion which may be thus obtained is not to be precisely estimated beforehand, and that the measure of effect ultimately realized may vary materially from that required for the perfect cure of the entropium.

The idea of establishing a firm cicatricial union between the skin near the lid-margin and the tarsal tissue, by means of an accurately planned cutting operation conjoined with deeply

3. Paul. Ægin; Albucasis; Rhazes; et al.

4. Delpech; Middeldorpf.

placed sutures, has been recently adopted and tested by several surgeons[5] and with the happy result of adding a valuable and substantially new method to those previously in use. In the operations of Anagnostakis and Panas a longitudinal incision is made through the skin and orbicularis muscle two or three millimetres from the row of cilia, and the subjacent tarsal tissue is denuded, either by the excision[6] or by the simple dissection[7] of the overlying muscular fibres, so as to expose also a little of the tarso-orbital fascia. Then leaving intact[8] the strip of skin and muscle next the lid-margin, or dissecting it carefully from its tarsal attachments,[9] sutures are inserted, uniting this border of the cut with the tarsal tissue or with the tarso-orbital fascia. The result is a strong traction exerted through the skin of the eyelid upon the lid-margin, tending measurably to evert it and also to diminish the inversion of the cilia. The operation of Hotz differs from those just mentioned in that (*a*) the skin and muscle are incised along a curved line corresponding to the attached border of the tarsal tissue, (*b*) the muscular layer overlying the entire tarsal tissue is dissected cleanly away, and (*c*) both of the edges of the incision in the skin are united by a line of sutures with the attached border of the tarsal tissue at or near the line of its junction with the tarso-orbital fascia. By this method very effective traction is exerted upon the anterior angle of the lid-margin, and the inverted cilia may often, even in cases of considerable incurvation of the tarsus, be drawn sufficiently away from the eyeball to remove this source of irritation. The great extent of the union effected by this method between the skin of the eyelid and the tarsal tissue is also an important safeguard against a relapse, and the disfigurement

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5. Anagnostakis, Annales d'Oculistique, XXXVIII. Panas, Nouveau Dictionaire de Médecine et de Chirurgie Pratique; article "Panpières." Hotz, Archives of Ophthalmology, VIII, 2, 1879. Ibid. XI, 4, 1882.

6. Anagnostakis.

7. Panas.

8. Anagnostakis.

9. Panas.

which follows such operations as involve the sacrifice of any considerable portion of the integument of the lid is avoided. Of all operative methods based upon traction through the skin of the eyelid this is doubtless the most effective; nevertheless its best results are attained mostly in cases of muscular entropium, while in cicatricial entropium it is often confessedly insufficient unless supplemented by grooving the tarsus or by some other equally radical procedure.[10]

The artificial production of vertical bands or bridles of cicatricial tissue in or beneath the integument of the eyelid, by means of sutures carried through the areolar tissue between the muscle and the tarsal tissue,[11] and extending from the lid-margin upward towards the eye-brow or downward towards the cheek, has been much lauded as a cure for entropium as well as for trichiasis. Unless conjoined with incisions in the tarsal tissue, or its ligamentous attachments,[12] it is not a very effective procedure, and it is open also to the objection already noticed in connection with the excision of a large flap of skin from the upper lid, that it tends quite as much to lift the eyelid as to evert its margin. It has, besides, the especial disadvantage of giving rise to peculiarly unsightly scars in the skin of the eyelid, and often also to a notched or scalloped deformation of the line of cilia.

Acting upon the theory that abnormal contraction of that portion of the orbicularis muscle which overlies the tarsal tissue is to be accounted the principal active cause of entropium, several surgeons of eminence have devised special operative methods for weakening or relaxing this muscle. Of the procedures which have been suggested for this purpose two of the most

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10. In the beginning Hotz advised in certain cases to split the lid-margin, as in the Jæsche-Arlt operation for trichiasis; in his later publication he rejects this and adopts instead of it the procedure of grooving the tarsal tissue according to the methods of Streatfeild and Snellen. In its latest modification Hotz's operation is essentially the operation of Snellen, with the disadvantage of being decidedly more complicated in execution.

11. Wardrop, see London Lancet, July 14, 1827; Gaillard, 1844.

12. Pagenstecher, Compte-rendu du Congrès périodique internationale d'Ophthalmologie, 1863.

important are the division of the external canthus, as recommended by Ware,[13] and the division of the muscle itself by several transverse cuts, as advocated by Himley.[14] Neither of these procedures can, however, be considered as a simple myotomy, since in canthotomy the external palpebral ligament is also divided, together with the skin and conjunctiva, and in Himley's operation the division of the muscle is combined with the excision of a broad flap of skin. The excision of a narrow strip of muscle, parallel and in close juxtaposition to the row of cilia, is adopted as a part of the procedure in the methods of several living surgeons,[15] as well as in some of the operations for trichiasis already noticed.[16] The simple excision of a strip of skin and muscle, about two millimetres in width, immediately in front of the row of eyelashes,[17] is a very effective method in muscular entropium of the lower eyelid, and requires no sutures or other special dressing.

The correction of the pathological incurvation of the tarsal tissue has been recognized by many writers as a chief desideratum in the treatment of entropium, and it has been claimed for most of the procedures already mentioned that they tend more or less directly to this result. That the classical writers from the time of Celsus both recognized and intelligently fulfilled this indication, is shown by the prominent part which they assign, in their descriptions of entropium operations, to the under-incision of the eyelid—*subsectio palpebrae.*[18] Nevertheless, this very effective incision fell into neglect, until it was revived in modern times by Crampton[19] as a part of the complicated and

13. Chirurgical Observations relative to the Eye, 2d Ed., 1805, Vol. I, p. 96.

14. Himley, Krankheiten und Missbildungen des menschlichen Auges; I., S. 133.

15. Streatfeild; Snellen.

16. Vacca Berlinghieri, 1825; Pétrequin, 1834.

17. I first saw this simple and effective operation performed by Snellen, in 1866, but I am not certain as to its authorship.

18. Celsus; Paul. Ægin.

19. An Essay on the Entropeon, or Inversion of the Eyelids; London, 1805.

now generally disused operation which bears his name. The descriptions given of the under-incision by the classical writers are very concise, and to this cause, perhaps, is due the fact that it has not been adequately appreciated in later times. It consists in an incision through the tarsal conjunctiva, parallel to the lid-margin, and extending into or through the tarsal tissue; it is described as being in some cases sufficient in itself to cure the incurvation of the lid, but as requiring in other cases to be supplemented by the excision of a strip of skin from the front of the eyelid. In certain cases it was recommended to make two parallel cuts instead of a single under-incision.[20]

As a means of facilitating the bending of the tarsus, or of effecting the transplantation of the unmutilated lid-margin with its misdirected cilia, the under-incision has never been surpassed, and even when extended through the entire thickness of the tarsal tissue and combined with the excision of a strip of the lid-integument, the marginal portion of the lid still retains its vascular connections and continues to be adequately nourished through the intact muscular layer. The cilia-bearing marginal strip is, therefore, not exposed to the danger of sloughing, as sometimes happens in the original Jæsche-Arlt operation for trichiasis, and in the method presently to be noticed under the name of tarsotomy. The theoretical objection that it involves the division of the Meibomian glands or their ducts, applies equally to tarsotomy and to the grooving of the tarsal tissue, but the objection is of little weight in view of the fact that in a large proportion of the cases in which the operation is indicated the Meibomian glands have already become degenerated from pathological changes incident to the pre-existing trachoma.

Moreover, it is now abundantly proved that no practical inconvenience is to be apprehended from this cause, while, as compared with the grooving of the tarsus, the under-incision has the advantage of not encroaching further upon tissues often already shrunken as a result of previous cicatrization. When properly executed the under-incision generally heals smoothly, and in healing does not ordinarily tend to the reproduction of

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20. Aetius.

the original incurvation. This method differs, further, from all others in the fact that it may be repeated almost *ad libitum*, and may, therefore, be practiced at a comparatively early stage of the affection, and while the trachomatous process is still incomplete.

Tarsotomy (*tarsotomia*) is the name given by von Ammon to an incision through the entire thickness of the eyelid. As practiced by him the section corresponds in position to the under-incision of the classical writers, from which it differs in the fact that all the tissues of the lid are cut through, so that the marginal cilia-bearing strip is left as a detached bridge united to the rest of the eyelid at its two ends only. Combined with the excision of a broad strip of skin from the front of the eyelid, and the closure of the cutaneous wound by sutures, it constitutes the operative method known as von Ammon's *tarsotomia horizontalis*[21]. The special defect in this method lies in the fact that the marginal bridge must be made quite broad in order to diminish the danger of its destruction by sloughing; moreover the excised strip of skin is taken from the side of the wound furthest from the lid-margin, where the subjacent tissues are loosest and where the traction through the skin is least effective. Notwithstanding thse shortcomings, the operation may be made to yield good results in most cases, and but for the danger of an occasional partial or total loss of the detached lid-margin by ulceration or sloughing, it would still deserve a high place among recognized operative methods.

The operation of Jæsche[22] which has scarcely found a place in surgical literature except in the altered form in which it has been adopted by Arlt, differs hardly at all from von Ammon's *tarsotomia horizontalis* except in the accidental particular that it was originally proposed as an operation applicable to cases of partial rather than of total entropium.

A vertical section through the middle of the lower eyelid, in its entire thickness, was advocated by Ware[23] in certain cases

21. Zeitschrift für die Ophthalmologie, III, 1833.

22. Medicinische Zeitung Russlands, 1844.

23. Op. cit. p. 97.

of incurvation of the tarsus with trichiasis, and a similar section of the upper lid has been lately revived as a means of diminishing tension in acute blennorrhœa. From recent experience of this procedure in the latter class of cases it appears to cause less deformity than might reasonably be expected: still it does not commend itself as a method likely to yield fine results in entropium.

Two vertical sections through the lid, near the inner and outer canthus respectively, constitute the leading feature in the method of Crampton already referred to. These sections were supplemented by an under-incision through the tarsal conjunctiva and by the excision of a portion of the lid-integument. Such radical measures as these can scarcely have failed to cure even the worst cases of entropium with trichiasis, but the operation is an unnecessarily severe one, and the three tarsal incisions are not more effective than the under-incision alone.

Canthotomy, or canthoplasty, is in very many cases an indispensable adjunct to other operative procedures in the treatment of cicatricial entropium. When the cut is made strictly in the line of the tendon of the orbicularis, it relaxes, to some extent, the marginal fibres of this muscle; besides enlarging the opening of the eyelids. But its greatest service is rendered when pains are taken especially to divide the external palpebral ligament, and thus to relieve the tarsal tissue from tension in a longitudinal direction. It is a not infrequent result of this operation to see the entropium disappear, after a few weeks, in the temporal third or half of the eyelid, leaving only the nasal or middle and nasal portions to be corrected by other means. Ware preferred to make the section of the outer canthus with a sharp, hooked bistoury, but at present it is usually done with strong scissors.

Grooving the front of the tarsal tissue, along a line parallel to and not far removed from its free border, is perhaps the most important modern contribution to the operative surgery of entropium. As described by Streatfeild,[24] a narrow strip of skin and muscle is excised down to the tarsal tissue, from

24. Ophthalmic Hospital Reports, I. 3, 1858.

which a narrow wedge-shaped slip is cut in such a manner as to permit the easy bending of the tarsal margin forwards. The wound may be allowed to heal by granulation,[25] or deep sutures may be inserted to draw together the two sides of the cut in the tarsal tissue, and, at the same time, close the gap in the skin,[26] or after exposing and grooving the front of the tarsus through a simple incision, the marginal bundles of the orbicularis may be excised, and the wound of the integument closed by deep sutures uniting both its lips to the tarsus along its line of junction with the tarso-orbital fascia.[27] The results of this operation, when carefully performed, are generally excellent. The grooving of the tarsal tissue, which is a rather troublesome and often tedious procedure, is best executed by the aid of a very sharp knife abruptly rounded at its tip. (See Fig. 10.)

Figure 10.

The removal of the entire tarsal tissue, whether by a bold excision,[28] or piecemeal,[29] is a procedure apparently prompted by despair of attaining a good result by other methods; I have not met with a case of entropium in which such an operation has appeared to me to be indicated.

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25. Streatfeild.

26. Snellen, Compte-rendu du Congrès périodiqne internationale d'Ophthalmologie, 1863.

27. Hotz.

28. Saunders, A Treatise on Some Practical Points Relating to the Diseases of the Eye; London, 1811.

29. B. A. Pope, Archives of Ophthalmology and Otology, I, I, 1869.

[TO BE CONTINUED.]

A CASE OF DOUBLE OPTIC NEURITIS FROM CHRONIC CEREBRAL MENINGITIS—DEATH—AUTOPSY.

BY DAVID WEBSTER, M. D.,
Professor of Ophthalmology in New York Polyclinic.

The patient, a plumber and gas-fitter, twenty-eight years of age and unmarried, came under my observation in the absence of Dr. Agnew, on September 29, 1883. Eleven years previously he had suffered from a sun-stroke which had confined him to his bed for a week or more, part of which time he was delirious. Since that he had always been subject to attacks of headache. These headaches were aggravated by his often striking his head against beams or other obstructions on rising suddenly and carelessly while engaged in his work. He also contracted malaria, and had "chills and fever" which "hung about him" for some years, but which seemed to have left him about the time he began to lose his eyesight, a little over a year ago.

Ten months before I saw him his vision had failed so that he could no longer see to read ordinary print, and from that time on it grew gradually worse.

His family physician, in the spring of 1873, advised a trip to Europe. He therefore crossed the Atlantic and spent some time with his relations in Suffolk, England. On September 5, 1883, when about to return to America, he consulted Mr. Nettleship, of London, who examined him and made the following note on a blank which the patient retained in his possession:

"Right eye, vision = $\frac{20}{CC}$. Left eye, vision = $\frac{20}{L}$; no improvement with glasses. Optic neuritis—lead?"

On testing his vision I found:

R. V. = $\frac{20}{CC}$
L. V. = $\frac{20}{CC}$
} No improvement with glasses.

Ophthalmoscopic examination showed that both optic disks were very much swollen, both being hypermetropic at their summits from one-twelfth to one-tenth, and having fleecy-looking exudations obscuring their margins and sloping off gradually into the surrounding retina, which was nearly emmetropic. The retinal arteries were considerably reduced in size, the veins somewhat dilated and tortuous. There were no retinal hemorrhages.

His mother said she had noticed a peculiarity of his walk, a kind of staggering gait, since the 1st of July. His headaches had been worse of late, and he was much troubled with dizziness. He had never contracted venereal disease of any kind, nor had he ever used alcoholic stimulants. He had been an excessive consumer of tobacco, both by chewing and smoking, but had recently quit chewing and limited his smoking to two pipes a day.

On testing him with worsteds I found he was color-blind, calling green red, red magenta, blue yellow, etc.

From his history and symptoms I had no doubt that the cause of his optic neuritis was an intra-cranial one, and I thought it was probably either a chronic, basilar meningitis or a tumor of the brain. In order to exclude kidney disease, however, I had him collect all the urine he passed in the next twenty-four hours, and sent to Dr. E. A. Maxwell, of this city, for examination.

The following results were reported by Dr. Maxwell:

"1. Good quantity.
2. Good specific gravity.
3. No albumen or sugar.
4. One broad hyaline cast.
5. A few cells of tubercular epithelium.
6. Some scanty, altered blood corpuscles.
7. Spermatozoids.
8. Crystals of oxalate of lime and triple phosphates."

I put the patient at once on mercurial inunction. A few days later I received a letter from his mother in which she said: "My son complained yesterday morning of sore mouth and gums. I washed off all the ointment. His face and head

looked so much enlarged last night. and all day he did not act so well as heretofore; was very quiet and would not talk at all. This morning at 4 o'clock, he commenced retching and vomiting. At first the vomited matter looked like green water, and afterward it was yellow, but so offensive I could hardly bear to stand by him. His head feels all enlarged, and is aching more after the retching. He says it must split open!"

My last note of the case, dated November 3, is:—"Patient does not complain now of headache or dizziness. He has had no attack of vomiting since that described by his mother in her letter."

The patient a few months later placed himself under the care of my friend, Dr. James Craig, of Jersey City, in whose care he died, and to whom I am indebted for the following careful notes of the remainder of his history and of his autopsy.

"Mr. S. came under my care on February 15, 1884, and presented the following symptoms: Total blindness, inability to walk, or even to stand alone, frequent and intense headaches and a sense of great fulness in the head. His urine was scanty, high in color, and at times albuminous. His efforts at micturition consumed from ten to thirty minutes. His bowels, as a rule, were constipated. When first seen, and for some time afterwards, he was unable to carry on conversation; and when questions were addressed to him he replied in monosyllables.

On account of his blindness and loss of power of locomotion I diagnosed his case as one of chronic cerebral meningitis, with pressure on, or inflammation of, the spinal cord.

The treatment consisted of counter-irritation by cantharidal collodion applied to the back of the neck and sides of the spinal column as far down as the sacrum. Under the impression that there was an exudation of serum and lymph I prescribed potassium iodide and bichloride of mercury; but learning that he had been ptyalized without benefit I abandoned the mercury and put him on increasing doses of potassium iodide. This was continued some time when syr. hydriodic acid (Gardner's) was substituted, with considerable benefit. The Galvanic battery was used, placing the positive pole on the back of the neck and passing the negative pole up and down the spine.

For his partial paralysis of the bladder I applied the positive pole of the Galvanic battery along the spine, especially over the lumbar and lower dorsal regions, while the negative pole was applied over the vesical region, with the happy result of a complete disappearance of the paralysis. Strychnia was given to increase muscular tone.

His symptoms gradually improved, and during the latter part of June he walked about four or five miles at a time. He experienced flashes of light, and at times could distinguish his mother's face, trees, houses, fences, animals, etc.

I saw him for the last time on July 16, and was informed of his demise on the 25th of the same month.

Two days before his death he was seized with a violent headache, nausea and vomiting, followed by convulsions, coma and death.

The autopsy was held on the 26th of July at his late home in Englewood, in the presence of three other physicians.

Autopsy.—Body well nourished, rigor mortis well marked, calvarium normal. There were several points of lymph on the vertex of the dura mater, no clot in longitudinal sinus, the convolutions were flattened from pressure within, and the surface of the brain was smooth. Beneath the points of exudation and for a small space around the dura matter was adherent. On removing the brain the pituitary body was torn off and through the small opening thus made serum poured out as from a fountain. On opening the ventricles they were found much distended by a large amount of very clear serum, estimated at from 8 to 10 fluid ounces. The lesions found satisfactorily account for all his symptoms and mode of death. At the request of the family no further examination of the body was made.

A CURIOUS DEFECT IN THE VITREOUS BODY.

BY W. CHEATHAM, M. D.,
Lecturer on Diseases of Eye, Ear and Throat, University of Louisville.

F. C., æt. 31, a man of not very good habits. Never had syphilis. Complains of inability to read for any length of time, which is accounted by the presence of hypermetropic astigmatism of $\frac{1}{\text{XXIV}}$; vision of right eye $\frac{20}{XL}$ with above glass.

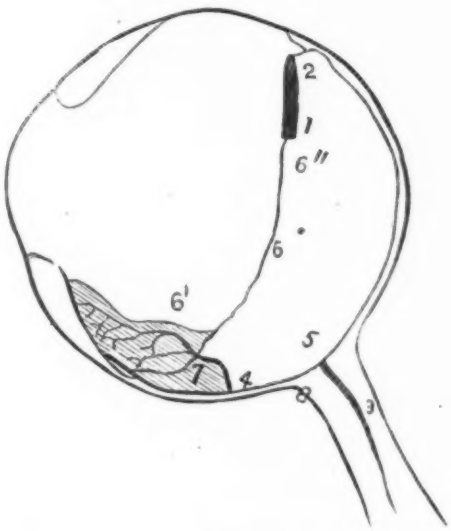

Fig. 11.

Vision of left $\frac{20}{XX}$. Gives a history of an injury to right eye resulting from a blow against a corn stalk while stooping in the dark. Says it pained him very much. Also gives a history of phlyctenular conjunctivitis when a child. On looking in with the ophthalmoscope the following conditions of things were observed:

The vessels were distributed in the retina as usual. The fundus was astigmatic. The axis of the astigmatism was 135.° In the vitreous was a grayish looking membrane resembling a detached retina. This membrane could be seen best through a $+\frac{1}{12}$. Figure 12 represents the membrane and fundus as seen with the ophthalmoscope. No 1 in figure 12 is an artery given off from one of the retinal arteries at No. 2, passing into the upper end of the false membrane, as represented at No 2, figure 11. This artery is quite large and appears to stop abruptly as if cut off at 6″, figures 11 and 12. There was also noticed at

Fig. 12.

6″, figures 11 and 12, a thin narrow membrane No. 6, extending downwards, and when a couple of lines below lower edge of optic nerve spreading out fan-shaped, 6′, and apparently attaching itself about the lower edge of the ciliary body. An artery given off from the lower branch of the arteria centralis retinæ at No. 4, figure 11, passes into the vitreous at the beginning of and into the fan-shaped membrane at No. 7 in figures 11 and 12, dividing into several branches in this membrane. Looking well down through a $+\frac{1}{10}$ or a $+\frac{1}{12}$, this fan-shaped membrane and its blood-vessels can be seen distinctly. The

fundus can be seen distinctly through this fan-shaped membrane by means of a $+\frac{1}{48}$, and shows an old choroidal inflammation heaping of pigment, etc. The dark lines in figure 11 represent retinal arteries. No 8 in figure two is optic nerve entrance. The abrupt ending of the artery No. 1 in figures 10 and 11 may be explained in this way: The artery probably bends on itself and returns to the retina. At No. 2 in figures 10 and 11 the artery can be seen leaving the retina.

I report the case, hoping it will be of some interest, never having seen one like it myself.

A CASE OF DIVERGENT SQUINT. UNUSUAL DIFFICULTIES IN CORRECTING IT BY OPERATION.

BY DR. C. F. CLARK.
Lecturer on Ophthalmology in Starling Medical College, Columbus, O.

The following case may prove of interest as illustrating a peculiar condition of one of the recti muscles as well as a somewhat unusual means of overcoming an extremely persistent divergent squint.

On February 14, 1884, Miss. ——, æt. 23, or thereabouts, a strong, healthy Irish girl, applied to me at my office for the correction of marked divergent squint of the right eye which had existed since early childhood.

Upon examination I found marked amblyopia with a divergence of about 6‴.

The eye followed the movements of the hand easily in every direction, but the degree of power in the muscles could not be determined owing to the absence of fixation.

The vision in the left eye was normal, there being manifest hypermetropia of .75 dioptries.

In the right eye, though the media were clear, vision was almost *nil* owing to marked amblyopia.

The ophthalmoscope revealed the fact that the eye was practically emmetropic and the fundus apparently normal.

It was noticeable that in fixing with the left (the good) eye its axis seemed directed somewhat to the temporal side. From this I concluded that the macula of each eye was probably situated somewhat to the temporal side of its normal position; this, perhaps, accounting for the tendency to divergence.

On February 28, the patient being under the influence of ether, I operated by dividing the external rectus of the right eye.

My purpose had been also to divide the external rectus of the left eye, but to this the patient would not consent.

This operation, though the division was free, yielded only a partial result, and in the course of a few days even this seemed to disappear.

Five days later, the patient still objecting to the operation upon the left eye, I placed her under the influence of ether and advanced the internal rectus muscle of the right according to the method of Dr. Prince, as described by Dr. Noyes, of New York.

The internal rectus muscle was found to be very small, weak and narrow at its point of insertion and, though a considerable advancement was made, and the attachments of the external rectus freely broken up, the good result was very transient.

For a few hours it appeared that I was to have an admirable result, but later the conjunctival fold at the point where the advanced internal rectus was attached appeared to have become stretched to such a degree as to allow the eye to resume its former position.

Six days later, the patient's consent having finally been obtained, she was again placed under the influence of ether, and I divided the tendon of the external rectus of the left eye, again separating freely the attachments of the external rectus of the right; even removing a narrow strip of the conjunctiva and capsule of Tenon.

After making these divisions as free as I thought safe, my chagrin may be imagined, when, after she had recovered from the effects of the anæsthetic, I discovered that the divergence was overcome only in part.

At this stage the idea suggested itself to me that by means of

a suture I might fasten the eyes in a position of convergence.

In order to accomplish this in such a manner as to distribute the tension equally between the two eyes and allow the one to yield which could best do so, I adopted the following plan:

The administration of the ether being renewed, near the nasal limbus of each cornea I inserted a silk suture from above downward beneath the conjunctiva for a distance of about one c.m., tying the thread in such a manner as to include the fold of conjunctiva in a loop. The needle with which the suture was introduced on each side was now passed through a small fold of skin at the inner canthus of each eye and the ends of the thread tied in a bow-knot across the bridge of the nose. By this means, the fold of skin at the inner canthus acting as a pulley, I was enabled to produce a considerable degree of convergence of the visual axes and to readjust by tightening the knot in case of loss by stretching of the conjunctival fold.

This thread was left in place over night, and notwithstanding the extent of these various operations there was no severe reaction and the result was admirable.

Allowing for the slight divergence of the left eye, which, as mentioned above, appeared to be due to the position of the macula to the temporal side of the posterior pole, the axes were now parallel and the result was satisfactory.

Three weeks later I find the following note in my case-book:

Eyes now appear straight and look quite well, but she states that at times the right eye turns outward and may remain in its old position for five minutes to half an hour.

She finds that the divergence is most apt to occur when she is at work and tired or excited.

The special advantages gained by this method of holding the eyes in position were, first, the distribution of the force between the two eyes in such a manner that the one would yield which could best do so; and second, that neither eye was absolutely limited in its movements but only relatively to the other eye, for the motion of either was communicated by means of the thread across the bridge of the nose to the other eye.

A marked peculiarity of this case, and the feature which was the cause of the great difficulty experienced in overcoming the

divergence, was the atrophic condition of the internal rectus muscle of the right eye.

At its point of insertion it was thin and rounded, little larger than an ordinary match, and presented none of that flattened tendinous expansion belonging to the normal recti muscles.

The movements of the eye were not limited in any direction, though, as stated above, I was unable to determine the power of overcoming prisms owing to the extreme degree of amblyopia.

This condition also interfered with a subjective determination of the refraction, though as judged by the ophthalmoscope, the diverging eye was apparently emmetropic while the other eye when tested by the chart revealed manifest hypermetropia = .75 D.

An interesting problem in the study of relative accommodation is suggested by this case.

It will be remembered that the left eye while fixing a point directly forward has its geometric axis directed outward to a very perceptible degree.

Now, supposing this same condition to exist in the amblyopic eye, which is apparently emmetropic, only a slight degree of convergence would be necessary for the accomodative act, and is it not possible that in early childhood the disuse of the internal recti in the accommodative act may have resulted in weakness of these muscles. And, that this may have been greatest in the right, or emmetropic eye, because in the left, which is hypermetropic, the increased impulse imparted to the third nerve to overcome the hypermetropia may have been shared by the internal rectus of that eye, and it consequently retained its power?

The above is with some diffidence suggested as a possible explanation.

If the case should be considered of sufficient interest to warrant it, the writer would be happy to see any suggestions which might assist in solving the problem as to the cause of the condition found.

TWO CASES OF EXUDATIVE CHOROIDITIS WITH SUBSEQUENT DETACHMENT OF THE RETINA.

BY ADOLF ALT, M. D.

Exudative choroiditis, which, although not a rare disease, but rarely comes under our observation at an early stage, is a disease which in many instances is readily influenced by our remedies. At least, we have often occasion to see a very dim vitreous body clear up gradually, the exudations between choroid and retina may partially or totally disappear, if they have not yet become organized, and sight, often reduced to almost nothing, may again become very useful. In other cases no form of treatment seems to influence the exuded masses in the least, and all remedies appear useless. Such experiences are certainly common to all oculists, and it is not to them that I now want to draw attention. I have within the last two years had occasion to observe two patients who came under my treatment on account of exudative choroiditis, which latter was readily influenced by treatment, who, however, soon afterwards presented themselves with detachment of the retina. In both cases this trouble too, yielded to treatment. The question now is, is such an occurrence of detachment of the retina after exudative choroiditis, perhaps, due to the remedies employed, or, is it simply due to a change in character of the choroiditis, from the exudative (fibrinous) into a serous form with subsequent detachment of the retina?

I give the history of the two cases in full.

Case I.—Miss R. B., æt. 18, a somewhat anæmic individual, came to me August 13, 1883. She had lost her right eye when about ten years old in consequence of several operations for traumatic cataract, performed on that eye by a notorious quack. She has always been shortsighted. For some months she has noticed black spots and shadows before the good left eye.

Her myopia was found to be one-half, with $V=\frac{5}{6}$. There

was a large posterior staphyloma. The vitreous body was generally turbid and contained a large number of floating opacities of various sizes and forms. The retinal veins appeared hyperæmic, the optic papilla was reddish.

The eye was put at absolute rest by instillations of atropia and by confining the patient to the dark room and bed. Four leeches were applied to the left temple. Iodide of potassium was given internally in ten grain doses three times a day, and the bowels were kept open by cathartics.

Under this treatment the general turbidity of the vitreous body cleared up rapidly and the floating opacities changed their shape and became smaller, and some of them disappeared altogether.

On the 1st of September the vitreous body was clear. There were as yet three large floating bodies, but the optic nerve and retina appeared normal, and the patient was very happy with the result. I discharged her, giving her the usual advice to be very careful in using this only eye, which was continually in danger from the high degree of myopia under which she was laboring. I ordered her to continue the iodide of potassium in five grain doses three times a day and enjoined upon her to report whenever she should notice the slightest change in her vision.

A week afterwards, on the 7th of September, patient came to me early in the morning. She was greatly frightened and very nervous. She told me she had not used her eye, since I had discharged her, for any near work and had felt perfectly well until this morning, when she noticed very alarming photopsiæ. I examined her carefully, but could not distinguish anything new in the condition of the eye. I then sent her home with the advice to keep as quiet as possible and to lie down. The same afternoon I was called to see her, "because she was blind."

When examining her then, I found something more than the inner half of her visual field wanting and perception in the outer half considerably reduced. With the ophthalmoscope the corresponding part of the retina was seen to be detached.

I at once injected subcutaneously one-sixth of a grain of muriate of pilocarpine and ordered absolute rest on the back. In the following days I made every day a subcutaneous injection of this remedy, increasing the dose each day. On September 11, one-third of a grain produced a momentary collapse and vomiting, which, however, yielded at once to brandy.

On September 12, part of the detached retina was seen to be reapplied and the visual field was accordingly enlarged. I was now informed that the patient's menses ought to have appeared a week before, but had failed to do so. Dr. Baumgarten was therefore called in, but he found everything in a normal condition and did not like to prescribe anything to bring on the flow unless I should consider it absolutely necessary for the safety of the patient's eye. As I did consider it so, the patient at his suggestion took a hot sitz-bath on the 15th, and her menses appeared on the 16th of the same month.

On the 18th, the retina was perfectly reapplied and the visual field and acuity had both returned to their former status. The muriate of pilocarpine injections were now discontinued.

The patient has had no relapse to this date, that is, for nearly a year and a half.

Case II.—Mrs. M. St., æt. 47, a very nervous lady, member of a family in which heart disease and pathological conditions of the blood-vessels have in succession caused several deaths, who herself has lost her menses when 38 years old, consulted me on June 9, 1884.

Two weeks before, while at supper, she noticed a cloud coming before her right eye. She had some weeks previously seen "spiders and cobwebs," but paid not much attention to them.

R. E. $V=\frac{6}{CC}$ eccentrially; L. E. $V=\frac{20}{LXX}$. The ophthalmoscope showed in the right eye a very turbid vitreous body with floating opacities. The optic nerve was but very dimly visible, and in the region of the macula lutea a large grayish-white irregular spot could just be discerned. The left eye showed a decidedly hyperæmic condition of the optic papilla and retina. The patient was put to bed in a dark room, the accommodation was paralyzed by atropia and subcutaneous injections of muriate of pilocarpine were made daily, beginning

with one-eighth of a grain. This dose was daily increased, until a slight collapse occurred after an injection of one-fifth of a grain. After this never more than one-sixth of a grain was given. At the same time the bowels were kept loose.

Under this treatment sight improved continually. On the 24th of June V was in the R. E. $=\frac{18}{CC}$, in the L. E. $=\frac{20}{XL}$. The vitreous body in the R. E. had cleared up considerably. The exudation in the region of the macula lutea had evidently become reduced in size and its margin began to show sharp dark lines.

The patient was now given one-tenth of a grain of bichloride of mercury three times a day for about three weeks, and this was followed up by ten grain doses of iodide of potassium three times a day, until August 20, when I saw her again.

V was now equally good in both eyes, being $\frac{20}{XL}$, although somewhat eccentric in the R. E. There was a large, clearly defined atrophic spot in the choroid just below, and a little inward from the macula lutea. L. E. apparently normal. Presbyopia.

Two months after this consultation, on October 30, the patient came to see me again, being greatly agitated. A brother (who was laboring under an aneurism of the aorta and who has since died from it) had paid a visit to her house and she had exerted herself considerably in order to make him comfortable and had even done all the cooking. From that time she had noticed that her R. E. was becoming more clouded again and for three days her L. E. was also considerably affected.

V was now in the R. E. $=\frac{20}{LXX}$ and in the hitherto good L. E. $=\frac{20}{CC}$. The ophthalmoscope revealed a detachment of the retina in both eyes, lying downwards. This detached portion of the retina in the R. E. was a very peripheral one, while in the L. E. it almost reached up to the optic nerve entrance.

The patient was at once put to bed and in a dark room. The subcutaneous injections of muriate of pilocarpine were resumed every other day and the bowels kept open. Drinking was reduced to the utmost and her meals were well salted.

On November 19, the detached retinæ were nearly altogether reapplied. In the left retina a number of small hemorrhages had appeared near the large veins.

On December 16 the conditions were found almost unchanged. V. was now in the R. E. $=\frac{20}{L}$, in the L. E. $=\frac{20}{L \times X}$.

The patient has gone South to spend the winter, and although I was to be informed of any change in the sight that might occur, I have not heard from her since.

I may here state that I have of late in several cases of detachment of the retina insisted on reducing the quantity of fluids consumed by the patients to the smallest possible quantity, and had their dishes well salted. I am satisfied that this *régime* had a beneficial influence upon the result of their treatment.

TRANSLATION.

The following is a translation of parts of a paper *On the Local Application of Cocaine by* ADOLF WEBER (Darmstadt), Zehender's Klinische Monatsblaetter f. Augenheilkunde.

* * * 3. I stretched the musculus rectus internus (according to Michel's? method) in a case in which, after paralysis of the abducens muscle, the eye-ball showed a convergence of 5 mllm, when the patient gazed at an object straight before him. This encheiresis, as far as my opinion goes, now only really deserves a place in our therapeutics; since, according to my experience, formerly it had always to be abandoned on account of the patient's refusing to stand the repetition of this painful manipulation or because it produced inflammation of the conjunctiva or because this membrane became torn. * * *

Perhaps one of the most important consequences of the anæsthetic properties of cocaine will be, that the tension of the eye-ball can be readily measured, on the cornea as well as on the sclerotic, and as often as desired, by means of a tonometer, without being in the least interfered with by reflex contraction of the muscles. The cocaine itself markedly reduces the tension of both cornea and sclerotic, in the normal as well as in the inflamed eye.

A further property of cocaine is its power to dilate the pupil. After the instillation of a solution of from two to ten per cent, under the precautions mentioned above, the pupil begins to dilate in from twenty to eight minutes, and in from forty to twenty-five minutes this dilatation reaches its maximum and remains so for some time, then gradually diminishing until after from six to twenty-hours it has disappeared altogether. The character of this dilatation of the pupil is totally different from the one which is brought about by atropia. At no time, not even during the acme of the cocainization, as it is reached for instance by the instillation of several drops of a ten per cent. solution, is the motility of the pupil wanting; it acts promptly and undoubtedly upon all influences, which produce changes in the pupil of the normal eye; thus, especially when light is thrown on both eyes, when an effort at accommodation is made, or upon painful irritation of the surface of the eye-ball. The sphincter pupillæ acts freely within its normal area of action, starting from the position into which it has been brought by the influence of the cocaine; yet a perfect ad maximum contraction of the pupil is no longer possible. We can, therefore, not speak of a paralysis of the sphincter pupillæ nor even of a loss of its energy. What then is the cause of this dilatation of the pupil, which, as long as everything producing contraction is excluded, is as perfect as ever atropia can make it? In spite of the most recent microscopical researches we are forced to assume for this an active dilatatory apparatus. Clinical observation always gladly makes use of the histological facts, but it must not be fettered by the latter. The clinical facts are less adulterated, because they are independent of all eventualities of the methods of examination. The history of the decussation of the optic nerve fibres well exemplifies, how successfully a good clinical observation may persist in its *ceterum censeo.* A similar persistence is greatly to be advised in the question of the existence of a dilatator pupillæ. If we remember how often the existence of this muscle has been denied, and that it always had to be acknowledged again, the clinicist will act wisely in counting with an active dilatatory apparatus. Further proofs of the existence of such an apparatus, deducted

from my experiments, are: 1.) An iris which has been paralyzed by atropia or a disease of the oculomotor nerve, will retract further upon the instillation of cocaine, in the same way as it does upon irritation of the sympathetic nerve; 2.) A pupil which is contracted by the action of eserine or pilocarpine can be dilated to medium width by cocaine, and it then remains immovable in this position, independent of all influences which otherwise would cause it to move. This is not, however, due to the mutual neutralization of the physiological effects of the alkaloids just mentioned, as is plainly seen by the fact that their other properties are unimpaired; thus the effect of the eserine and pilocarpine with regard to the accommodative apparatus—thus the anæsthetizing action of the cocaine and some other properties yet to be mentioned. The condition of the pupil referred to is, therefore, simply the expression of mechanical equilibrium between the circulary and the radiary fibres.

This antagonistic equilibrium is produced by one part of pilocarpine to four of cocaine, and by one part of eserine to twenty-five to thirty of cocaine; this means that the instillation of a mixture in the proportions just given, does not alter the size of the pupil. * * *

A mixture of, say, one drop of a two per cent solution of pilocarpine and four drops of a two per cent solution of cocaine instilled into the conjunctival sac at intervals of from five to ten minutes, will produce in an emmetropic eye a myopia of from seven to eight D., which will last two hours, while externally no change is visible. Only the motility of the pupil is wanting. * * *

Everobody knows that the pupil, even after having been dilated ad maximum by atropia, will contract at once when the humor aqueous escapes from the anterior chamber. Such a contraction does not or hardly follows after the instillation of cocaine, especially not when the sphincter pupillæ has first been paralyzed by atropia. The lens is pushed towards the cornea without any change in the size of the pupil, as often as the aqueous is allowed to flow off. * * *

I will add here that adhesions of the pupillary margin which for weeks had been treated unsuccessfully by atropia, gave way

at once without the aid of instruments, as soon as the effect of cocaine was superadded. * * *

When from three to five drops of a solution of from two to ten per cent are instilled into a healthy emmetropic eye, the far-point remains unchanged. When, however, the same dose is instilled into a highly myopic eye or into an eye in which the circulary fibres are paralyzed, by genuine mydriasis or consequent upon the use of atropia, the far-point is changed; in the myopic eye the far-point is shifted slightly nearer, in the mydriatic eye it is moved a small distance farther off. The near-point, however, is undoubtedly moved away from all eyes, but to a varying degree; by instilling one drop of a ten per cent solution every ten minutes, five drops produced a loss of the range of accommodation equal to two-thirds; we could, however, never bring about a total union of the far-point and near-point. * * *

CORRESPONDENCE.

The following letter was received and is here published in justice to Mr. Foucar:

I notice in your journal of November 15, in the article on Cocaine, some unfavorable remarks in reference to my preparation as sent you. At first the demand was so great that I was unable to crystallize the drug, and the solution had some color. But now, having increased my facilities for manufacturing, I am able to produce the cocaine in crystals, a sample of which I take pleasure in sending, that you may give it a fair trial. You will find it, if your experience is the same as Drs. Moore, Gruening and others here, as good as the foreign made salt. Should you find the results favorable I should be pleased to have you kindly so state in your next issue, as the unfavorable comments may have a bad effect otherwise. I send also a graduated bottle for making solutions.

Very Respectfully,

F. W. Foucar & Co.

I have since received a sample of three grains of muriate of cocaine from Mr. Foucar. The crystals were somewhat different from Merck's and the 4 per cent. solution I made of them was turbid, and after it had been standing for some time a considerable amount of undissolved matter remained lying at the bottom of the bottle. Merck's cocainum muriaticum solubile is dissolved altogether. The action of this *sample* of Foucar's muriate of cocaine with regard to anæsthesia and mydriasis is about the same as that of Merck's. It does, however, not affect my accommodation, nor do the mydriasis and anæsthesia appear as soon after the instillation of a drop of the 4 per cent. solution of Foucar's salt, as they do after the use of the same quantity of Merck's.

I am glad Mr. Foucar acknowledges that his facilities, when he sold the solution, were not fully what they ought to have been. Certainly my remarks were absolutely true and based upon experiments made before the St. Louis Society of German Physicians, on the eyes of my friend and colleague Dr. W. Hunicke. But the fact that a solution was sold which did not come up to the mark may very well account for many of the reports of cases in which cocaine was tried and found to be useless.

If Mr. Foucar's muriate of cocaine is in future always as good as the *sample* he so kindly sent me, it will surely help us quickly over the difficulties arising from the inadequate supply of this valuable drug. we are as yet laboring under.—EDITOR.

EDITORIAL NOTICE.

With this number the editor and publishers of the AMERICAN JOURNAL OF OPHTHALMOLOGY want to express their thanks to the subscribers and supporters of this journal for the year 1884.

Although they knew that it would be a difficult task to start and keep alive a similar journal, they thought it was worth the

trial. The large list of subscribers the journal has at once obtained and which has been continually increasing has shown them that not only was there room for such a journal, but that this journal seemed to fill it.

In thanking our co-workers for their support we can only express the hope that they will help us also in future to increase the utility and field of this journal.

As it is, however, a difficult matter to have always enough *original* work on hand for a certain date to fill a certain number of pages, we shall from this forth depart from this arrangement, and, appearing regularly on the 15th of each month, give what there is on hand for this date in the same way as it is done by all similar journals. At the same time the editor will give such selections from foreign journals as he may from time to time think of value for our readers.

Original communications on all matters concerning ophthalmological science are again most earnestly solicited.